

WHAT IS CLAIMED IS:

1. An optical information-recording medium, comprising:
an information-recording layer in which information is recorded, utilizing the holography;
a polarization-changing layer for changing the polarizing direction of the light passing therethrough; and
a reflection layer, disposed far away from said information-recording layer and said polarization-changing layer viewed from the incident side of said light, for reflecting said light.
2. An optical information-recording medium according to Claim 1, wherein
said polarization-changing layer is disposed closer to said information-recording layer, viewed from the incident side of light, and is in contact with said information-recording layer.
3. An optical information-recording medium according to Claim 2, wherein
said information-recording layer is in contact with said reflection layer.
4. An optical information-recording medium according to Claim 1, wherein
said polarization-changing layer is disposed far away from said information-recording layer, viewed from the incident side of light, and is in contact with said reflection layer.
5. An optical information-recording medium according to Claim 4, wherein
said polarization-changing layer is in contact with said information-recording layer.
6. An optical information-recording medium according to one of Claims 1 to 5,
wherein said polarization layer comprises:
a base plate; and
a phase difference-generating layer for generating a phase difference in the light which is

incident on said polarization-changing layer;

whereby molecules in said phase difference-generating layer are arranged along a circle on said substrate.

7. A method for manufacturing a polarization-changing layer which includes a base plate and a phase difference-generating layer for generating a phase difference in the incident light, wherein molecules in said phase difference-generating layer are arranged along a circle on said base plate, said method comprising the following steps of:

applying a phase difference material providing said phase difference-generating layer onto said base plate; and

irradiating a linearly polarized light to said phase difference material in the state of rotating said substrate;

whereby said phase difference material is disposed in a predetermined direction with respect to said linearly polarized light.

8. A method for manufacturing a polarization-changing layer according to Claim 7, wherein said phase difference material is azobezene, and said linearly polarized light has an oscillating plane which is aligned in the radial direction of rotation when said base plate is rotated.

9. A method for manufacturing a polarization-changing layer which includes a base plate having an orientation layer on the surface and a phase difference-generating layer for generating a phase difference in the incident light, wherein molecules in said phase difference-generating layer are arranged along a circle on said base plate, said method comprising the following steps of:

rubbing said orientation layer;

applying a phase difference material providing said phase difference-generating layer onto

said base plate; and

rotating said base plate.

10. An optical information recording apparatus for recording information in an optical information-recording medium according to one of Claims 1 to 6, said optical information recording apparatus comprising:

an information light generating unit for generating information light carrying information;

a recording reference light generating unit for generating recording reference light; and

a recording optics for irradiating information light and recording reference light onto information-recording layer from one side thereof to record the information on said information-recording layer of said optical information-recording medium by means of an interference pattern provided by interfering said information light and said recording reference light with each other.

11. An optical information reproducing apparatus for reproducing information from an optical information-recording medium according to one of Claims 1 to 6, said optical information reproducing apparatus comprising:

a reproducing reference light generating unit for generating reproducing reference light;

a reproducing optics for collecting reproducing light from information-recording layer of said optical information-recording medium on the same side of said reproducing reference light irradiated onto said information-recording layer by irradiating said reproducing reference light onto said information-recording layer; and

a detection unit for detecting the reproducing light collected by said reproducing optics.

12. An optical information reproducing apparatus according to Claim 11, further comprising:
a noise suppressing unit interposed between said reproducing optics and said detection unit for

penetrating only a linearly polarized light which has the same vibration direction as that in the circularly polarized light penetrating the polarization-changing layer of said optical information-recording layer.